



PENTACHLOROPHENOL

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Agency for Toxic Substances and Disease Registry ToxFAQs

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This fact sheet answers the most frequently asked health questions (FAQs) about pentachlorophenol. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to pentachlorophenol happens mostly to workers at lumber mills and wood-treatment facilities where it is used as a wood preservative. Pentachlorophenol can harm the liver, kidneys, blood, lungs, nervous system, immune system, and gastrointestinal tract. It can also irritate the skin and eyes. This chemical has been found in at least 260 of 1,416 National Priorities List sites identified by the Environmental Protection Agency.

What is pentachlorophenol?

(Pronounced pĕn/'tə klôr/ ō fē/ nol)

Pentachlorophenol is a manufactured chemical not found naturally in the environment. Pure pentachlorophenol occurs as a colorless crystal. The impure form is dark gray to brown dust, beads, or flakes. It has a sharp chemical odor when hot, but very little smell at room temperature.

Pentachlorophenol was used as a biocide and wood preservative. It was one of the most heavily used pesticides in the United States. Now, only certified applicators can purchase and use pentachlorophenol.

It is still used in industry as a wood preservative for power line poles, railroad ties, cross arms, and fence posts. It is no longer found in wood preserving solutions or insecticides and herbicides that you can buy for home and garden use.

What happens to pentachlorophenol when it enters the environment?

- ☐ Pentachlorophenol generally sticks to soil particles, but its movement in soils depends on the soil's acidity.
- ☐ Not much pentachlorophenol will evaporate into the air.
- ☐ It lasts for hours or days in air, soils, and surface waters.

- ☐ It doesn't dissolve easily in water.
- ☐ In soils and surface waters, microorganisms break it down into other compounds.
- ☐ Sunlight breaks it down in surface waters and air.
- ☐ Some of the break-down compounds may harm people.
- ☐ It is present in fish, but tissue levels are usually low because pentachlorophenol breaks down in the body.

How might I be exposed to pentachlorophenol?

- ☐ Breathing contaminated air while working with treated wood at wood-treatment facilities and lumber mills
- ☐ Touching treated lumber, for example, in wood-treatment facilities and lumber mills or in construction or farming
- ☐ Breathing contaminated air from log homes made from pentachlorophenol-treated logs
- ☐ Breathing contaminated air near waste sites, sites of accidental spills, and work sites
- ☐ Touching contaminated soil at waste sites and landfills
- ☐ Drinking contaminated water near waste sites, sites of accidental spills, and work sites
- ☐ Eating contaminated food, such as fish, or drinking contaminated water, but these exposures are low and are not very common.

ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

How can pentachlorophenol affect my health?

Short-term exposures to large amounts of pentachlorophenol or long-term exposure to low levels can harm the liver, kidneys, blood, lungs, nervous system, immune system, and gastrointestinal tract. Researchers have seen similar effects in animals. Impurities in commercial pentachlorophenol may cause many, but not all, of its harmful effects. Direct contact with pentachlorophenol can irritate the skin, eyes, and mouth, particularly when it is a hot vapor.

We do not know whether pentachlorophenol causes birth defects in people. It caused a decrease in the number of offspring born to animals that were exposed to it while they were pregnant.

How likely is pentachlorophenol to cause cancer?

The International Agency for Research on Cancer has determined that pentachlorophenol is possibly carcinogenic to humans. This conclusion is based on animal studies that showed an increased risk of cancer, specifically in the livers and adrenal glands of mice. There is no good evidence that pentachlorophenol can cause cancer in people.

Is there a medical test to show whether I've been exposed to pentachlorophenol?

Laboratory tests can measure pentachlorophenol in the blood, urine, and body tissues. These tests are only useful shortly after you are exposed because pentachlorophenol leaves the body fairly quickly.

These tests do not tell you how much pentachlorophenol you've been exposed to or if your health will be harmed. The tests are not routinely available at your doctor's office.

Has the federal government made recommendations to protect human health?

The Environmental Protection Agency (EPA) has set a limit for drinking water of 1 part of pentachlorophenol per billion parts of water (1 ppb). EPA recommends that children not drink water containing more than 0.3 parts of pentachlorophenol per million parts of water (0.3 ppm) for longer than one day; adults should not drink water with more than 1 ppm. The EPA requires that spills and accidental releases of pentachlorophenol into the environment of 10 pounds or more must be reported to the EPA.

The Occupational Safety and Health Administration (OSHA), the National Institute for Occupational Safety and Health (NIOSH), and the American Conference of Governmental and Industrial Hygienists (ACGIH) recommend a maximum level of 0.5 milligrams of pentachlorophenol per cubic meter (0.5 mg/m³) of workplace air for an 8-hour workday over a 40-hour workweek. These agencies advise avoiding eye and skin contact because this may be a route of significant exposure.

Glossary

Biocide: A substance that can kill living things.

Carcinogenic: Ability to cause cancer.

Long-term: Lasting one year or longer.

Milligram (mg): One thousandth of a gram.

ppb: Parts per billion.

Short-term: Lasting 14 days or less.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1994. Toxicological profile for pentachlorophenol (update). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-639-6359. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

